

CLAIMS

1. ¹⁰² A method for registering with a plurality of registration zones in a wireless communication network, the method comprising:
 - receiving an assignment for a first Temporary Mobile Station Identity (TMSI) from a first network entity in response to registration with a first registration zone;
 - registering with a second network entity in a second registration zone; and
 - receiving an assignment for a second TMSI from the second network entity in response to registration with the second registration zone.
2. ¹⁰³ The method of claim 1, wherein each registration zone corresponds to a Radio TMSI (R-TMSI) zone defined by GSM MC-MAP standard.
3. ¹⁰² The method of claim 1, wherein each network entity corresponds to a base station in the communication network.
4. ¹⁰² The method of claim 1, further comprising:
 - maintaining a first counter to provide an indication to initiate timer-based registration; and
 - initiating timer-based registration if a value in the first counter exceeds a timer-based registration count value.
5. ¹⁰² The method of claim 4, further comprising:
 - receiving a value representative of a maximum expiration period for timer-based registration; and
 - setting the timer-based registration count value based on the received value.
6. ¹⁰² The method of claim 5, wherein the timer-based registration count value is a pseudo random value in a range between zero and a maximum value related to the received value.
7. ¹⁰² The method of claim 1, wherein the registration with the second network entity is in response to entering the second registration zone.

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25. ⁶² The method of claim 24, wherein the first registration zone is entered first and the second registration zone is subsequently entered, the method further comprising:

activating a first timer for the first R-TMSI zone upon registration with the second base station; and

deactivating a second timer for the second R-TMSI zone upon registration with the second base station.

4 activating a first timer for the first R-TMSI zone upon registration with
the second base station; and

6 deactivating a second timer for the second R-TMSI zone upon
registration with the second base station.

26. The method of claim 25 further comprising:

2 updating a count value for the first timer at each update interval; and
 timing out registration with the first R-TMSI zone if the count value for
 4 the first timer exceeds a time-out value.

27. ¹⁰² A method for managing multiple Temporary Mobile Station

2 Identities (TMSIs) in a radio communication network, the method comprising:
 4 assigning a first TMSI to a mobile station via a first base station when the
 mobile station enters a first Radio TMSI (R-TMSI) zone;

6 registering the mobile station with a second base station in a second R-TMSI zone; and

8 assigning a second TMSI to the mobile station via the second base station
so that the mobile station is registered in a plurality of R-TMSI zones.